Putting the Learner at the Center

Next-Generation Innovation Emphasizes Enabling Learning in Classrooms and E-Learning Environments


Several years ago, Apple Computer ran a well-publicized advertising campaign featuring individuals whose achievements were born out the capacity to think differently. While not a new concept—who isn’t tired of the charge that we think outside the box?—the ability to think differently is practically synonymous with innovation. And thinking differently is precisely what the NLII is proposing educators do if higher education is to lead in the development of effective learning environments that meet not only the needs of today’s students but also the needs of generations to come.

Examples of true educational innovation can be found in the learner-centered design and practices that are rapidly making their way into colleges and universities in both classrooms and e-learning environments. While credit is due the psychologists, neuroscientists, cognitive scientists, and evolutionary biologists who, for the past 10 years, have been studying and researching learning and cognition, the educational innovation we’re seeing today is the result of learning communities that reflect on the data and challenge the assumptions, norms, and conventions of current practices. The technology that supports and enhances those practices is a key theme and research area for the NLII.
Mapping the Learning Space: An NLII Conceptual Framework

With teaching and learning at the heart of the NLII’s agenda, creating a conceptual framework that adds value to its work requires a unique blend of research and vision. This past year, NLII 2002 cofellows Colleen Carmean and Jeremy Haefner put their vision and research skills to work to create a conceptual framework for learning and cognition. Carmean’s visual map of today’s learning territory gives entry into the ideas, practices, and relationships that form the basis of deeper-learning principles, teaching practices, design implications, learning activities, and technology uses (see http://www.educause.edu/nlii/keythemes/lcp/). The conceptual framework was used in guiding the NLII Spring 2003 focus session (see related article, “NLII Spring 2003 Focus Session: Next-Generation Course Management Systems”) and will continue being refined and repurposed throughout the year.

Conceptual Frameworks and Communities of Practice

The NLII has long believed that communities of practice are fertile ground for the development and refinement of conceptual frameworks, the definition of principles, and the identification of effective educational practices. In concert with MERLOT (http://www.merlot.org/Home.po)—the Multimedia Educational Resource for Learning and Online Teaching—since its formation, the NLII has worked to define, create, and sort through the vast landscape of new teaching, learning, and technology issues. Now the relationship has gone one step further with the development of joint programs to create and support communities of practice, as announced at the NLII 2003 Annual Meeting in New Orleans.

Beginning in 2003, the MERLOT Teaching and Technology Board will advise the NLII on refinement of the map of the learning space that is being used as a conceptual framework (see sidebar). In return, the NLII will contribute an editor, Colleen Carmean, to MERLOT’s nascent Teaching and Technology discipline community (http://www.merlot.org/Home.po?discipline=Teaching_and_Technology), a cross-disciplinary community of practice for faculty and faculty-support professionals that
addresses knowledge, productivity, and professional effectiveness when teaching with technology.

The community will build and review a body of reflections, best practices, instructional support ideas, resources, and materials that advance the pedagogical understanding of teaching with technology, whether in the classroom, online, or in blended models. Two types of resources will be featured: those that target academic disciplines—such as simulations, animations, tutorials, drills and practices, quizzes and tests, lectures and presentations, case studies, and reference materials—and those that target faculty development, such as workshops and training materials, policies, software and hardware evaluations, and templates—(see http://taste.merlot.org/communities/faculty_development/).

**Identifying the Key Principles Is Not Enough**

In the past 10 years, advancements in what we know about learning have been remarkable. Unfortunately, utilization of those advancements has not kept pace. That lack of progress, according to Virginia Tech’s (http://www.vt.edu/) Terry Wildman, who spoke at the NLII 2003 annual meeting, demonstrates “how incredibly wasteful we are in how we deal with the body of knowledge of learning theory.” As research develops, says Wildman, educators focus primarily on the latest, high-profile ideas about learning, often at the expense of older but still powerful frameworks.

How do we hold onto educational insights that are unlikely to lose relevance? Wildman suggests sticking with three facets of learning that have yet to be disproved: construction, action, and the role of time. “It is very hard to honor these themes in our curriculum,” said Wildman. “Program requirements of the core curriculum often become checklists, which makes it easy to miss the point that learning is a building process.”

To help us understand the extent to which our pedagogies and our use of technology support this building process over a long period of time, Vicki Murell of the University of Tennessee Health Science Center (http://www.utmem.edu/) encourages educators to shift
their attention to those moments in their own experiences when things clicked for learners. “Those are probably the moments when you were really active,” she said. “Keep in mind that learners remember 80 percent of what they use and do in real life and 95 percent of what they teach someone else. So, the question is, How can we support active learning by using technology?”

Murrell says faculty development is a critical area for the adoption of technology. “We must keep in mind that we’re dealing with adult learners,” she said at the NLII annual meeting. “They know what they want, so it’s important to help them take the path of least resistance to get it.” That path of least resistance, says Murrell, means just-in-time delivery—not delivery when they have no need or use for help. And it must involve access to an expert in their field with whom to share the information and guide its use. See NLII Annual Meeting session, “Identifying the Key Principles Is Not Enough: Dealing with the Barriers between Learning Research and Instructional Practice” (http://www.educause.edu/asp/conf/function.asp?PRODUCT_CODE=NLII031/SESS05&MEETING=nlii031).

A Model for Online Learning Environments

If we know that learning is socially constructed, then what do we know about successful learning in online environments? At the SUNY Learning Network (SLN) (http://sln.suny.edu/), the systemwide program for the delivery of complete online degree programs for the 64 colleges of the State University of New York (http://www.suny.edu/) and efforts to assess teaching and learning have resulted in a model for e-learning that takes into account good educational practices, recognized principles of learning, and what we know about how people learn in largely text-based asynchronous environments.

As success stories go, the SLN is a shining star: it has seen explosive growth in participation among SUNY campuses (55 of the 64 institutions), complete online academic programs (55 degrees and certificates), courses (more than 2,500 annual offerings) and students (more than 40,000 enrollments annually out of SUNY’s 400,000). The SLN was recognized by EDUCAUSE in 2001 with a Systemic Improvement in Teaching and Learning award (http://www.educause.edu/awards/tl/winners.asp) and by the Sloan Foundation–

SLN’s e-learning model, according to Interim Director Peter Shea and lead trainer Bill Plex, illustrates how learner centeredness must be wed with knowledge building, assessment, and community in higher education, as suggested by the how-people-learn literature. Most important, in order to understand what makes for good online learning environments, especially those that lack face-to-face interaction, one must understand what makes for good learning environments offline.

The model that Shea and Plex presented at the NLII Annual Meeting focuses on teaching presence (instructional design and organization, facilitating discourse and direct instruction), social presence within a virtual community of inquiry (the ability of participants in an online course to project their personal characteristics into the community to present themselves as real people (see http://cade.athabascau.ca/vol14.2/rourke_et_al.html for a discussion of social presence), and cognitive presence (the extent to which students are able to construct and confirm meaning through sustained discourse in a community of inquiry). As part of their research on the impact of those forms of presence on learning in an introductory psychology course, a rubric was developed that includes each form of presence, and is tied to students’ participation in a student-led discussion; for example, each student asks a question for the chapter and moderates a discussion, and the rubric measures the quality of the question posed by the moderator as well as those who are responding. (For a copy of the rubric, contact bpells@snl.suny.edu) More information, including the slides from the presentation, is available at http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0332.

**Navigating Learning Theory for Instructional Technology Use**

In addition to creating new organizational collaborations that leverage resources, some institutions of higher education are implementing online support systems, many of which
are embedded in the campus learning management system. The University of Arizona (http://www.arizona.edu/), for example, has designed and is in the process of implementing a knowledge-based system built around learning principles to provide online support for individual faculty members.

The Module Organizer and Teaching Suggestor (MOATS) offers guidance in developing learner-centered practices across a variety of instructional technologies. Instead of teaching faculty how to use technology, MOATS focuses on the learning problem the faculty member wishes to address and then offers templates and use-case examples of how to apply the technology in accordance with the learning principle. The University of Arizona developers are looking for institutional collaborators to further this work. A mock-up of MOATS can be found at http://moats.arizona.edu. See Annual Meeting presentation, “Navigating Learning Theory for Instructional Technology Use” at http://www.educause.edu/asp/doclib/abstract.asp?ID=NL0339.

**New Strategies and Roles for Supporting Teaching and Learning**

Any talk about being learner-centered demands an understanding of the learners and the learners’ relationship to technology, particularly among new learners. At the NLII Annual Meeting, Kathy Christoph and Carrie Regenstein of the University of Wisconsin–Madison (http://www.wisc.edu/) looked at how student expectations are pushing the boundaries of campus information technology.

“As new technology competencies emerge, our culture is being redefined,” said Christoph. “For students those competencies include games, Google, Napster, streaming video, PDAs, and instant messaging.” But what’s really shaking up information technology departments across campuses, she said, is the emerging technology known as middleware—the means by which personalization, authorization, and authentication are made possible. As students, faculty, and administrators integrate online information systems into their teaching and learning environments as well as into their work, middleware, in essence, provides access to the server infrastructure.
These days, students arrive on campus expecting to use technology to conduct all of their personal and school-related activities. They expect to be able to communicate from anywhere, anytime, at high speeds, and without failures, and they expect the kind of personalization capabilities they get from MyGoogle. Faculty, on the other hand, are concerned that the pace of and the changes in teaching and learning are based solely on the allure of technological advancements and not on the demands of pedagogy. The problem is, none of the customers—the students, the faculty, or the administrators—are talking to middleware developers, even though middleware controls many of the changes in teaching and learning. The NLII recognizes the inherent disconnect in this equation and is encouraging faculty and staff to become more involved in the development of standards and specifications, particularly as they involve courseware, course management systems, and middleware (see article “How (and Why) to Listen to Heavy Metal,”).

What’s next for IT departments as they prepare for the future? According to Christoph and Regenstein, a rising issue will be advocating for the student. “Currently we advocate for the faculty or for the infrastructure,” said Regenstein, “but not for the student.” While that’s beginning to change, models don’t yet exist that provide technology solutions under the umbrella of academic technology. “Institutional organizations that see themselves as representing the student—or advocating for the student—are leading the way in new demands for services as well as in planning for technology innovations,” said Christoph. See Annual Meeting presentation, “New Strategies and Roles for Supporting Teaching and Learning” at http://www.educause.edu/asp/doclib/abstract.asp?ID=NL10302).

**Building the Linkages between Educational Research and Everyday Practice**

There’s no doubt that educational research is essential to the development of successful learner-centered practices, but there’s a considerable disjuncture between the worlds of the educational researcher and the instructional developer. At the University of Southern California (http://www.usc.edu/), inspiration for bridging those worlds happened at an international conference on learning sciences in Ann Arbor, Michigan
(http://www.umich.edu/~icls/), a few years ago. It was there that USC director of
teaching and learning services Sue Gautsch and Program Managers/Learning
Technologists Rick Lacy and Otto Khera heard keynote speaker Linda Roberts comment
on a more-than-500-page proceeding, which she referred to as “fabulous, relevant, and
meaningful work,” adding that “no one who needs to read it will read it.”

According to Gautsch, “While we know the vocabulary of learner-centered practices, we
need to go deeper into the intersection between research and everyday practice so that we
can absorb the findings of educational research and at the same time contribute to the
findings of educational research.” The result is a multitiered program of curricular
redesign grants that models that intersection of research and practice as a six-pointed star
that includes an institutional course management system, a faculty transformation,
learner-centered practices, an assessment and an evaluation, and, finally, a culmination in
institutional transformation.

The first point of the star illustrates USC’s experience with a course management system
as a necessary but not sufficient step, providing as it did a scalable technology for the
masses, a motivation for information technology units to consider learning and teaching
as a core university function, and creation of what they call “a learning technology
middle class.” While the course management system fosters teaching efficiency, its main
benefit was its ability to create opportunities for transformational experiences among
faculty and students.

How does an institution create transformational experiences for faculty? According to
Gautsch, Lacy, and Khera, there must be sufficient opportunities for faculty to
experiment and reflect, iterative engagement in development cycles, flexible and
redundant approaches, and appreciation for different faculty needs. In response, USC put
into place a set of activities that scale from a jump-start phase to get faculty started in
“barn raising,” which brings faculty together as a community to build something.
Learner-centered design is an explicit aspect of the USC grant program and process. At all times, sound pedagogy and instructional design occupy center stage and are made accessible in a conceptual framework organized around 10 institutional principles of instructional design. Five of the principles are derived from learning science and are based in part on M. David Merrill’s “First Principles of Instruction,” submitted for publication to Educational Technology Research & Development (http://id2.usu.edu/Papers/5FirstPrinciples.PDF). The other five are locally developed principles. Chickering and Gamson describe an additional seven principles of good practice in “Seven Principles for Good Practice in Undergraduate Education,” which appeared in the AAHE Bulletin in March 1987 (http://aahebulletin.com/public/archive/sevenprinciples1987.asp). For more information, see http://www.usc.edu/cst. The slide presentation for, “Towards the Learning Paradigm with Multi-Tiered Curricular Redesign Grants” and other resources can be found at http://www.educause.edu/asp/doclib/abstract.asp?ID=NL10325.

Another resource for linking learning sciences and technology research to everyday practice may be found in LESTER (Learning Science and Technology Repository), which acts as a forum and a clearinghouse for leading projects, researchers, research organizations, and funding agencies. Developed by Rice University’s (http://www.rice.edu/) ETRAC (Educational Technology Research and Assessment Cooperative) (http://antioch.rice.edu/etrac/) and sponsored by Microsoft Research (http://research.microsoft.com/), this robust, Web-accessible database inventories learning science and technology initiatives, including their research priorities, time lines, funding sources, personnel, and sponsoring organizations. According to Lisa Spiro, “LESTER aims to enable the educational community to track emerging technologies, implement learner-centered tools and methods, and formulate an informed agenda for future research.” See http://lester.rice.edu for information on LESTER. The NLII 2003 Annual Meeting slide presentation on LESTER is available at http://www.educause.edu/asp/doclib/abstract.asp?ID=NL10320. Those interested in partnering with this effort should contact Lisa Spiro at lspiro@rice.edu.
Adult Learners, E-Learning and the Learning Enterprise

Joel Hartman has questions. Like just about every other academic administrator, the vice provost of information technologies and resources at the University of Central Florida (http://www.ucf.edu/) wants to know whether it’s possible for staff to extend the gains of active, online learning to faculty who are on the fringe of institutional support, whether systemic support can be made available to faculty who wish to teach online for less than optimal reasons, and whether adoption of institutional processes that support e-courses can yield measurable results in student-centered learning compared with other types of online courses. In addition, what are some of the new administrative and academic policies and procedures that ensure quality in learner-centered approaches?

At UCF, an ever-shrinking budget coupled with rising enrollment has significantly increased the demand for online courses. In fact, more than half of all UCF faculty are engaged in the university’s three types of online courses: W (Web only), M (mixed, meaning, face-to-face time and Web based), and E (enhanced courses, meaning, face-to-face courses with Web-based assignments and resources). With demand for support increasing—usually after the course already has an online component—the university now offers faculty a six- to eight-week development program—complete with a $2,000 stipend for participation—in an attempt to increase effectiveness and encourage learner-centered practices in online environments (for more information see http://cdws.ucf.edu/ or UCF’s Learning Online at http://learn.ucf.edu/).

As e-learning becomes a key part of the learning enterprise, faculty and staff development and support become more critical, as evidenced by presentations made at the NLII Annual Meeting by Hartman and representatives from SUNY Empire State (http://www.esc.edu/), at which a comprehensive faculty development and support program has been organized around creating communities of practice to facilitate professional development and collaboration. Like UCF, Empire State has a core student population among adult learners. At the NLII Annual Meeting, Empire State’s Carole Carnevale and Patricia Lefor discussed the needs of the online adult learner and presented a set of approaches used at the institution, including a model for asynchronous
discussions to engage the students as discussants and facilitators, the use of self-assessment and reflection activities for students to assess their progress, the development of learning activities that link course concepts with students’ backgrounds, the use of student and peer facilitators and teaching assistants, and the development of multiple-use resources to support the learning activities. Empire State is also looking into e-portfolios, or outcomes portfolios, to enhance learning.

Carnevale and Lefor say that engaging adult learners and facilitating transformation means incorporating individualized and independent study as much as possible. “Adults need learning activities that are linked with experiences,” they say, “so use simulations with specific learning outcomes built in.” For more details about the SUNY Empire State approach to adult learners, see the presentation at http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0327 or http://www.esc.edu/cdl.

Vignettes about Learner-Centered Design and Practice

Sometimes a short vignette of a specific application of learner-centered design and practice is worth more than an hour-long presentation or a hundred pages of research. Such was the case at two sessions at the NLII Annual Meeting.

In the first case, University of Arizona (http://www.arizona.edu/) graduate research assistant Andrew Clark reported that the university had launched its GISWeb project to address the needs of a campuswide minor in geographic information systems by using WebCT-based interactive learning modules with lab-specific classroom instruction. The idea is to integrate online learning and classroom-based education for use in teaching geographic information systems to students. The GISWeb project has also been structured to enable students to give feedback on the course so as to aid in enriching the learning process for future students. The feedback will benefit students and faculty by addressing the way in which information has been disseminated over the Web and in the classroom. The overall structuring of the GISWeb project should prove to be a rich, evolving source of information for students in the minor both now and in the future.
In the second case, representatives from the University of British Columbia (http://www.ubc.ca/) described how a presidential-level committee, mandated to explore the use of learning technologies, is funding two mixed-mode e-learning development projects: one in arts (English 111, writing) and one in science (Chemistry 121, laboratory). The projects focus on exploring how new learning technologies could be integrated with the pedagogical objectives of the respective course offerings and thereby improve the learning outcomes for students.

According to UBC’s Skylight research associate Cyprien P. E. Lomas and UBC’s arts instructional support and information technology director Ulrich Rauch, strategies for teaching and learning—partially imposed by the culture and constraints of a discipline—require a variety of differing strategies to fully explore and exploit the power of technology to support teaching and learning. There are challenges both common and unique to an arts and science approach to e-learning, and particular disciplinary premises may determine the implementation of e-learning. Some of the challenges include the effectiveness of teaching an experimental science with simulations and engaging students through the use of multifaceted approaches to English prose themes.

What do the University of Arizona and the UBC approaches have in common? Both of them assert that sharing information across an institution or across institutions is key. They demonstrate that diverse teams bring a multiplicity of perspectives to tackle particular problems. This is a great model for students. They discovered that pedagogy must drive the learning tools that get selected and that there’s still a need to go beyond commercially available software. They found that print-based course materials must be modified once you go to a more deeply structured learning perspective and/or when you go to the hybrid/mixed mode (scaffold for deep structure). And they found that assessment and learning outcomes must be embedded into the project from beginning to end and then on into the next development cycle. See NLII Annual Meeting presentations at (http://www.educause.edu/asp/doclib/abstract.asp?ID=NLI0320).